Pictographs to the Rescue! Social Media for Functionally Illiterate Users

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In order to be included in today's society, it is becoming increasingly important to be able to use the current available technological tools. The number of apps is growing exponentially, but very few are really accessible to people with Intellectual Disabilities (ID). However, users indicated very clearly their desire to interact with their friends and family on social media. The Able-to-Include project seeks to improve the lives of people with ID. Able-to-Include is creating a context-aware Accessibility Layer based on three key technologies that can improve the daily tasks of people with ID and help them interact with the Information Society. These technologies are a text simplifier, pictograph translation technologies, and text-to-speech funtionalities. The integration of this Accessibility Layer with existing ICT tools will be tested in different pilots in Spain, Belgium, and the UK.

Within the Able-to-Include project, KU Leuven is responsible for the development of the Text-to-Pictograph and Pictograph-to-Text translation tools. The Text-to-Pictograph translation tool translates Dutch, English, and Spanish text into a series of Sclera or Beta pictographs. Additional to a shallow source language analysis, we use WordNets to link pictographs to groups of synonyms and retrieve appropriate or semantically related pictographs in the translation process. The system allows social media text to be converted into pictographs with a single tap.

The Pictograph-to-Text translation system provides help in constructing Dutch, English, and Spanish textual messages by allowing the user to introduce a series of pictographs and translates these messages into natural language using WordNet synsets and a trigram language model. So far, we have developed two different input methods. When using social media websites, users have access to the Accessibility Layer to construct pictograph messages using a pictograph hierarchy and a pictograph predictor. Their messages will be converted to text, which can be posted on the website.